

CLAIMS

1. A fibre-optic sensor array (15) for a surveillance system (10) characterised in that the sensor array comprises at least two fibre-optic point sensors (16), in
5 which each pair of successive point sensors is linked by a distributed fibre-optic sensor (18).
2. A fibre-optic surveillance system (10) characterised in that the system comprises a fibre optic sensor array (15) according to claim 1 connected to
10 an interrogation system (12) which is adapted to respond to an optical phase shift in at least one sensor of the array due to a force applied to that sensor and to establish the position at which said force is applied.
3. A fibre-optic surveillance system according to claim 2 wherein the fibre-optic
15 sensor array is connected to the interrogation system by a fibre-optic cable.
4. A fibre-optic surveillance system according to claim 2 wherein the fibre-optic sensor array is connected to the interrogation system by a transducer and a
20 wire cable.
5. A fibre-optic surveillance system according to claim 2 wherein the fibre-optic points sensors comprise optical fibre wound into a flexural disc.
6. A fibre-optic surveillance system according to claim 2 wherein the fibre-optic
25 points sensors are geophones.

7. A fibre-optic surveillance system according to claim 2 wherein each fibre-optic point sensors comprises a fibre-optic accelerometer.
8. A fibre-optic surveillance system according to claim 2 wherein the distributed
5 fibre optic sensors comprise optical fibre packages within a cable to measure pressure on or bend of the cable.
9. The system of claim 2 wherein the interrogation system comprises an interferometric interrogation system.
10. The system of claim 9 wherein the interferometric interrogation system comprises a reflectometric interferometric interrogation system.
11. The system of claim 10 wherein the reflectometric interferometric
15 interrogation system comprises a pulsed reflectometric interferometric interrogation system.
12. The system of claim 11 wherein the pulsed reflectometric interferometric interrogation system employs time-division multiplexing to distinguish
20 individual sensors.
13. The system of claim 2 wherein the interrogation system comprises a Rayleigh-backscatter interrogation system.
- 25 14. The system of claim 13 wherein the Rayleigh-backscatter interrogation system comprises a pulsed Rayleigh-backscatter interrogation system.

15. A method of establishing the position at which an object moving on a surface crosses a closed path, or an open path of fixed length, thereon, characterised in that the method comprises the steps of
- 5 (i) positioning a sensor according to claim 1 on or below said path; and
- (ii) analysing optical signals received from the sensor to establish the position of the object along the path, or the position at which the object has crossed said path.
16. A method according to claim 15 wherein the optical signals are analysed by
- 10 measuring the delay between the signals received from adjacent fibre-optic points sensors along the array and combining these signals with the signal from the distributed fibre-optic array linking those fibre-optic point sensors to locate and confirm the said position.